unified COLOR™

HDR PhotoStudio 2

User Manual

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Photo copyrights:

- **Bryce Canyon:** Uwe Steinmuller
- **Irish Bar:** John Shaw
- **Waterfall:** Reed Hoffman

Unified Color Technologies, LLC
21 Airport Blvd, Suite F
South San Francisco, CA 94080
Phone: (650) 952-8886
Fax: (650) 872-8887
Email: info.web@unifiedcolor.com
Web: www.unifiedcolor.com

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Table of Contents

Getting Started 1
What is HDR? 2
Program Features & Benefits 3
Interface Features 6
System Requirements 7
Getting Help 8
Technical Support Options 8
About this Manual 8
Installation 9
PC 9
Mac 9

Navigating HDR PhotoStudio 11
Menu Bar 12
File Menu 12
Edit Menu 13
Recipe Menu 13
View Menu 14
Help Menu 15
Toolbar 16
Status Bar 18
Keyboard Shortcuts (PC) 20
Keyboard Shortcuts (Mac) 21
Mouse Shortcuts 23
Sliders and Fields 24

Using HDR PhotoStudio 25
Selecting Images 26
Creating/Merging Images 26
Batch Processing 28
Undo/Redo 29
Rotation 30
Fixed 30
Free-Angle 30
Cropping 31
Free Selection 31
Fixed Size 32
Aspect Ratio 32
Resize 33
Veiling Glare 34
Brightness/Contrast 36
Shadow/Highlight 38
Sharpness 40
White Balance 41
Color Tuning 43
Saturation 45
Tint 46
Noise Elimination 47
Presets 49
Applying Presets 49
Creating Presets 49
Working with Presets 49
Recipes 50
Loading a Recipe 50
Assigning a Recipe to the Recipe Tool 50
Clearing Loaded Recipes 50
Creating a Recipe 50
Metadata 51

End User License Agreement 53
HDR PhotoStudio License Agreement 54

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Table of Contents

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Getting Started

HDR PhotoStudio is the only HDR application that unlocks the full range of vibrant colors visible to the human eye by allowing you to create and work with High Dynamic Range (HDR) images. HDR PhotoStudio uses Unified Color Technologies' patented Beyond RGB™ color model, which gives complete control over the colors and brightness in your images and can also merge multiple images to create truly stunning results. Colors and brightness are processed on separate channels, meaning that you can adjust colors without affecting image brightness and vice-versa.

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What is HDR?

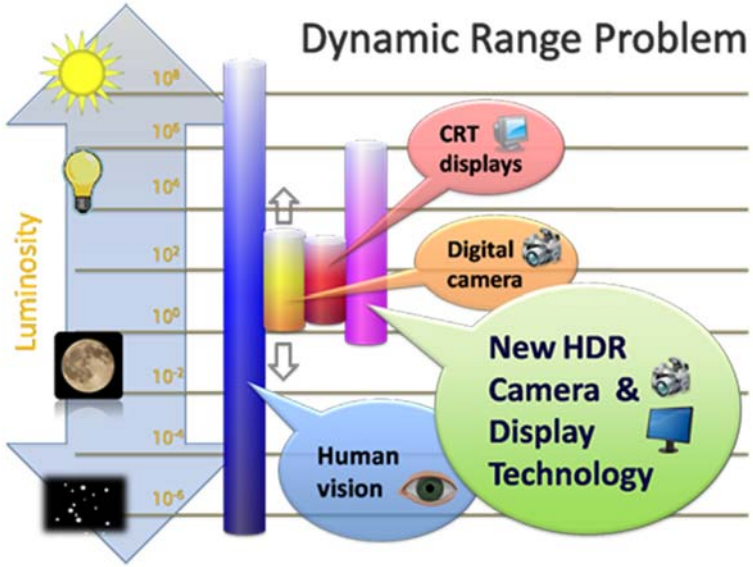
Nature abounds with colors and contrasts that the human eye and brain are exquisitely adapted to see and appreciate. Unfortunately, the pictures we take of these stunning scenes often appear flat and dull by comparison even when we use high-quality equipment. Why?

The problem is that the range of colors and contrasts available in nature far exceeds the capabilities of conventional CRT-based image capture and display technology. This chart compares the luminosity range of the human eye with that of current display technology. This limit is referred to as the Dynamic Range problem.

As you can see, no current device even comes close to reproducing the range of light and color visible to the human eye. This is why the pictures you take of beautiful landscaped and high-contrast scenes don't always match what you actually saw when you took the picture

High Dynamic Range (HDR) imaging expands the range of exposures far beyond the limits of conventional Low Dynamic Range (LDR) digital imaging techniques. HDR imaging can accurately represent the wide range of intensity levels found in real scenes ranging from direct sunlight to the deepest shadows.

Traditional display and printing technologies use color models that limit the available gamut of colors to accommodate current display technology. HDR PhotoStudio uses the full spectrum of color visible to the human eye at all times without imposing any artificial limits. Your current display or printer may not be able to show the full gamut of colors that HDR PhotoStudio works with… but working with HDR PhotoStudio ensures that your images will keep looking better and better as display and printer technologies improve.



HDR PhotoStudio delivers extreme precision thanks to its 32-bit floating point High Dynamic Range technology that is built into the entire workflow. This technology offers a dynamic range of 10^{76} : 1, which is enough to address any real-world lighting conditions.

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Program Features & Benefits

Designed around Nature: HDR PhotoStudio is the only image-editing application that offers the Beyond RGB color model based on full human vision (rather than a particular display device).

Full Color Integrity: HDR PhotoStudio has none of the typical color shift problems commonly found in traditional imaging tools because the brightness (brightness, contrast, shadow/highlight, sharpness, etc) and color (white balance, saturation, color tuning, etc.) channels are separate. This means that brightness changes will not change your color tones, and vice-versa.

High-Precision HDR Editing: HDR PhotoStudio offers full-featured 32-bit floating point image editing that gives you full fidelity without having to down sample your image to 8- or 16-bits. This amazing level of precision is available is delivered through powerful, easy to use tools.

Industry Leading HDR Compression: Save disk space and bandwidth using the highest level of data compression available. HDR PhotoStudio saves JPEG-sized files with no loss of color or brightness data, and with the editing history preserved between sessions.

Advanced HDR Rendering: Work on a single HDR image, or merge multiple images together to create an HDR image. HDR PhotoStudio takes advanced HDR rendering to the next level.

Unlimited Undo/Redo: Undo and redo your actions at will during the current session. Create recipes from your stored editing history (even across multiple editing sessions) when you save images in the HDR PhotoStudio BEF file format.

Adobe® Photoshop® Support: The available BEF file format plug-in for Photoshop lets you open, edit and save BEF files in Photoshop.

Noise Elimination: The patented noise-reduction tools included in HDR PhotoStudio reduce brightness and color noise while preserving more of the fine image details that are often lost when using other image applications.

Powerful Tools: HDR PhotoStudio includes a full suite of powerful editing functions such as **Veiling Glare** (which reduces haze caused by stray light reflecting between camera lens surfaces), **White Balance**, **Color Tuning**, **Tint** (toning), **Local Contrast**, **Shadow/Highlight** with halo reduction, and many more.

Convenient Features: HDR PhotoStudio includes many features designed to make your workflow faster and more efficient. You may preview thumbnails for most image formats (including RAW). Batch processing lets you apply a recipe to multiple images. Dragging and dropping multiple images into HDR PhotoStudio automatically launches the Merge function. Get an unobstructed view of your work in full-screen mode, using easy mouse shortcuts to access all program functions and tools.

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Program Features & Benefits (continued)

Optimized for High Performance: HDR PhotoStudio supports multi-core CPUs. Application performance scales almost linearly based on the number of available CPU cores. For example, a quad-core CPU system quadruples performance compared to a single-core system, and so forth.

Native 64-bit Support: Using the latest 64-bit computing architecture gives you higher performance and removes the legacy memory limitations of 32-bit systems. HDR PhotoStudio includes native x64 platform support for either Intel® or AMD® processors.

BEF File Format: The native HDR PhotoStudio BEF file format offers a lossless way to save HDR images using extremely efficient compression that saves both disk space and bandwidth. BEF files save visual data using the full color range of human vision. Tying file data to human vision and not a particular display device lets you store images in a form suitable for any display hardware, even displays that have not yet been invented. Saving an image in BEF format means that your pictures will keep looking better and better as display technology improves. You can even specify quality settings that define the degree to which colors may visually deviate from their original values, which gives you maximum control over file size vs. quality.

Operation History: Normally, exiting and restarting an application loses your history, even if you saved your file just before exiting the application. HDR PhotoStudio saves your complete operation history when you save images in the BEF format. This exclusive feature means that you can reopen a previously saved file and see what you've done before. You can also use this information to create a recipe for future use.

Future-proof: HDR PhotoStudio always lets you work with the full color range available to the human eye, even if cannot see all of these colors on your monitor. Many cameras typically do capture full color range data; however, selecting an image option such as JPG clips the color data. Saving your images in a RAW format and merging them into an HDR PhotoStudio BEF file preserves the data, which will become visible as display and printing technology improves. With HDR PhotoStudio, you never have to worry about re-taking images or not being able to preserve the full richness of your images.

Supported File Formats: HDR PhotoStudio supports the following image file formats:

- Input:
  - BEF (HDR PhotoStudio native file format)
  - Radiance HDR (.hdr, .pic)
  - OpenEXR (.exr)
  - Camera RAW formats (.cr2, .nef, .raw, etc. For a full list of supported RAW file types, please visit http://www.unifiedcolor.com/hdr_photostudio_raw_support.
  - 8-, 16-, and 32-bit TIFF (.tif, .tiff)
  - JPEG (.jpg, .jpeg)
  - Bitmap (.bmp)

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Program Features & Benefits (continued)

- Output:
  - BEF
  - OpenEXR (.exr), all OpenEXR compression options are supported
  - 8-, 16-, and 32-bit TIFF (.tif, .tiff)
  - JPEG (.jpg, .jpeg)
  - Bitmap (.bmp)

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Interface Features

HDR PhotoStudio uses a powerful, intuitive interface that includes the following features:

- Full-screen mode.
- Fast mouse scrolling and zooming (from 5% to 800%)
- Three selectable display themes
- Dockable **Operations** panel
- Image **Metadata** window
- **Status Bar** that displays:
  - **Color Profile** selection button
  - **Display Brightness** controls
  - Help and status messages
  - Zoom controls
- Large or small **Toolbar** icons
- Preset selection controls in tool windows
- Eyedropper tools to make brightness/color selections faster when using the **Brightness/Contrast**, **Veiling Glare**, **Shadow/Highlight**, **White Balance**, and **Color Tuning** tools.
- User-definable one-click **Recipe** button.
- **Undo**/**Redo** buttons.
- Free-angle image rotation.
- 100x100 pixel **Noise Elimination** preview, for faster performance.

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System Requirements

To use HDR PhotoStudio, your system must conform to the following minimum requirements:

- **Operating System (PC):** Microsoft® Windows® XP, Vista®, or Windows 7.
- **Operating System (Mac):** MacOS® X Leopard (10.5.x) or MacOS X Snow Leopard (10.6.x)
- **Processor:** Dual-core 2.0GHz or faster minimum. Quad-core 2.8GHz or faster recommended.
- **RAM:** 2GB minimum (4GB recommended).

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Getting Help

Technical Support Options

The following technical support options are available in addition to this user manual:

- **Video tutorials:** See HDR PhotoStudio in action by watching the videos available at http://unified-color.com/tutorials.
- **Frequently Asked Questions:** If you have a question, chances are that you're alone. Visit the online FAQ at http://unifiedcolor.com/hdr_photostudio_faq.
- **Technical Support:** If the above resources don't answer your question, please contact Unified Color Technical Support via email at support@unifiedcolor.com.

About this Manual

This manual uses several formatting conventions to present information of special importance.

Lists of items, points to consider, or procedures that do not need to be performed in a specific order appear in bullet format:

- Item 1
- Item 2

Procedures that must be followed in a specific order appear in numbered steps:

1. Perform this step first.
2. Perform this step second.

Specific keyboard keys are depicted in square brackets and are capitalized, for example: [ESC]. If more than one key should be pressed simultaneously, the notation will appear as [KEY1]+[KEY 2], for example [ALT]+[F4].

Interface elements such as document titles, fields, windows, tabs, buttons, commands, options, and icons appear in **bold** text.

Menus and submenus have the notation **Menu>Submenu**. For example, "Select **File>Merge to HDR**" means that you should first select **File** in the **Menu Bar**, and then select **Merge to HDR** in the menu.

Note: This manual includes keyboard shortcuts for both PC and Mac users. For Mac users, the ⌘ symbol signifies the [COMMAND] key and the ⌥ symbol signifies the [OPTION] key.

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Installation

PC

To install HDR PhotoStudio on a PC:

1. Download the HDR PhotoStudio setup application to your disk, following the on-screen instructions. The downloaded file will be **hdrphotsuitesetup_x86.exe** (for 32-bit systems) or **hdrphotsuitesetup_x64.exe** (for 64-bit system).)
2. Launch the HDR PhotoStudio setup application. If you see a security warning window, click **Run** to proceed with the installation.
3. The Welcome window appears. Click **Next** to proceed.
4. The **License Agreement** window appears. Review the license carefully. If you agree to the terms, check the **I accept the terms of the License Agreement** radio button and then click **Next** to proceed.
5. The **Choose Components** window appears. You should accept the default installation options unless you are an advanced user. Select your desired options by checking the appropriate checkboxes, and then click Next to proceed.
6. You will see a progress bar and detailed installation progress information while HDR PhotoStudio installs to your system. When the installation is complete, click **Next** to proceed.
7. The **Installation Complete** window appears. You may launch HDR PhotoStudio and/or review the Readme file, which contains recent information that may not be included in this manual.

Your installation is now complete. Enjoy!

Mac

To install HDR PhotoStudio on a Mac:

1. Double-click the HDR PhotoStudio install package icon.
2. Follow the on-screen instructions. These will be similar to the PC instructions listed above.

Your installation is now complete. Enjoy!

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Navigating HDR PhotoStudio

This chapter walks you through the HDR PhotoStudio interface. HDR PhotoStudio offers you several ways to access most functions, which lets you work with images on your terms and focus on getting the results you want instead of figuring out how to use the program.

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Menu Bar

The **Menu Bar** appears at the top edge of the HDR PhotoStudio screen.

File Menu

The **File** menu lets you work with and manage your image files. This menu has the following options:

- **Open:** Selecting **File>Open** lets you open a single image in HDR PhotoStudio. You may also press [CTRL]+[O] (PC) or [⌘]+[O] (Mac).
- **Save:** Selecting **File>Save** saves the current image. You may also press [CTRL]+[S] (PC) or [⌘]+[S] (Mac). A dialog box appears asking you to specify your desired quality settings. When saving to the BEF format, the quality setting is based on human visual acuity. A Quality setting of 1 means that the difference between the original and saved pixels will not exceed the eye's ability to spot difference. Values above 1 are detectable by the human eye, and values below one are below the visually detectable threshold.
- **Save As:** Selecting **File>Save As** lets you save the current image under a new filename and/or folder. You may also press [CTRL]+[SHIFT]+[S] (PC) or [SHIFT]+[⌘]+[S] (Mac).
- **Close:** Selecting **File>Close** closes the current image without exiting HDR PhotoStudio. You are prompted to save any unsaved changes. You may also press [CTRL]+[F4]. (PC) or [⌘]+[W] (Mac).
- **Merge to HDR:** Selecting **File>Merge to HDR** opens the Merge to HDR window, which lets you merge multiple images into a single HDR image. Please see "Creating/Merging Images" on page 26 for more about merging images. You may also press [CTRL]+[H] (PC) or [H] (Mac).
- **Batch Processing:** Selecting **File>Batch Processing** lets you apply a recipe to multiple images. Please see "Batch Processing" on page 28 for more about batch processing. You may also press [CTRL]+[B] (PC) or [⌘]+[B] (Mac).
- **Recent Files:** The **File** menu displays your 10 most recently opened images for quick access. Click the desired image to open it.
- **Exit:** Selecting **File>Exit** (PC) or **File>Quit** (Mac) exits HDR PhotoStudio. You are prompted to save any unsaved changes. You may also press [ALT]+[F4] (PC) or [⌘]+[Q] (Mac).

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Edit Menu

The **Edit** menu lets you perform basic image editing functions and manage presets. This menu has the following options:

- **Undo:** Selecting **Edit>Undo** undoes your actions. Saving images in the BEF file format preserves your editing history between editing sessions for viewing or including in a recipe. You may also press [CTRL]+[Z] (PC) or [⌘]+[Z] (Mac).
- **Redo:** Selecting **Edit>Redo r**edoes your undone actions. You may also press [CTRL]+[Y] (PC) or [⌘]+[Y] (Mac).
- **Copy:** Selecting **Edit>Copy** copies the current image to the Windows Clipboard. You may also press [CTRL]+[C] (PC) or [⌘]+[C] (Mac).
- **Paste:** Selecting **Edit>Paste** pastes the Windows Clipboard contents into the current image. You may also press [CTRL]+[V (PC) or [⌘]+[V] (Mac)].
- **Presets:** Selecting **Edit>Presets** opens the **Presets** window, which lets you manage your HDR PhotoStudio presets. Please see "Presets" on page 49 for more about working with presets.

Recipe Menu

The **Recipe** menu lets you work with and manage HDR PhotoStudio recipes. A recipe is a set of editing operations packaged into a single script that you can perform in one easy step. Please see "Recipes" on page 50 for more about working with recipes. This menu has the following options:

- **Dynamic Range Mapping Highlights Priority:** Selecting **Recipe> Dynamic Range Mapping Highlights Priority** assigns the default dynamic range mapping recipe to the **Recipe** tool in the **Toolbar**.
- **Loaded recipes:** The **Recipe** menu displays your currently loaded custom recipes. Click the desired recipe to apply it to the image. Selecting a loaded recipe assigns that recipe to the **Recipe** tool in the **Toolbar**.
- **Create Recipe:** Selecting **Recipe>Create Recipe** lets you create a recipe based on the current image's editing history.
- **Load Recipe:** Selecting **Recipe>Load Recipe** lets you load a saved recipe for use with the current image.
- **Clear List:** Selecting **Recipe>Clear List** removes your custom recipes from the **Recipe** menu. You can load them later as described above.

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Menu Bar (continued)

View Menu

The **View** menu lets you customize the HDR PhotoStudio interface and zoom in and out of the image you are currently working on. This menu has the following options:

- **Operations:** Selecting **View>Operations** toggles the **Toolbar** on and off. Please see "Toolbar" on page 16 for more about the Toolbar.
- **Show Metadata:** Selecting **View>Show Metadata** toggles the **Metadata** window on and off. Please see "Metadata" on page 51 for more information about metadata and the Metadata window. you may also press [CTRL]+[I] (PC) or [⌘]+[I] (Mac).
- **Status Bar:** Selecting **View>Status Bar** lets you control the Status Bar appearance as follows:
  - **Show Status Bar:** Selecting **View>Status Bar>Show Status Bar** toggles the **Status Bar** on and off.
  - **Display Brightness Slider:** Selecting **View>Status Bar>Display Brightness Slider** toggles the **Display Brightness** controls in the **Status Bar** on and off.
  - **Zoom Slider:** Selecting **View>Status Bar>Zoom Slider** toggles the **Display Zoom** controls in the **Status Bar** on and off.

  Please see "Status Bar" on page 18 for more information about the Status Bar.
- **Show Startup Dialog:** Selecting **View>Show Startup Dialog** toggles displaying the Startup window on and off when you start HDR PhotoStudio. Please see "Selecting Images" on page 26 for more about the **Startup** window.
- **Zoom In:** Selecting **View>Zoom In** zooms in closer to your image. You may also press [NUM]+[+] (PC) or [+] (Mac).
- **Zoom Out:** Selecting **View>Zoom Out** zooms out farther from your image. You may also press [NUM]+[-] (PC) or [-] (Mac).
- **Zoom to Fit:** Selecting **View>Zoom to Fit** zooms in or out until your entire image fits within the HDR PhotoStudio window. You may also press [NUM]+[*] (PC) or [*] (Mac).
- **Actual Pixels:** Selecting **View>Actual Pixels** zooms the image to actual size. You may also press [NUM]+[/] (PC) or [/] (Mac).
- **Display Theme:** Selecting View>Display Theme lets you select different HDR PhotoStudio interface themes.
- **Fullscreen Mode:** Selecting View>Fullscreen toggles Fullscreen mode on and off. Access menus and tools by right-clicking the mouse when in Fullscreen mode, as described in "Mouse Shortcuts" on page 23. You may also press [F11 (PC) or [F] (Mac).

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Help Menu

The **Help** menu lets you get help with using HDR PhotoStudio. This menu has the following options

- **Help:** Selecting **Help>Help** opens this manual in Adobe Acrobat® format (PDF). You may also press [F1] (PC).
- **Homepage:** Selecting **Help>Homepage** launches your default web browser and takes you to the HDR PhotoStudio Features page.
- **Provide feedback:** Selecting **Help>Provide feedback** launches your default browser and takes you the HDR PhotoStudio Feedback page, which lets you submit feedback about your experience with the application.
- **Check for updates:** Selecting **Help>Check for updates** connects HDR PhotoStudio to the Unified Color, Inc. update server and notifies you if an update is available.
- **About HDR PhotoStudio:** Selecting **Help>About HDR PhotoStudio** opens the **About HDR PhotoStudio** window, which displays program information and provides access to the License Agreement.

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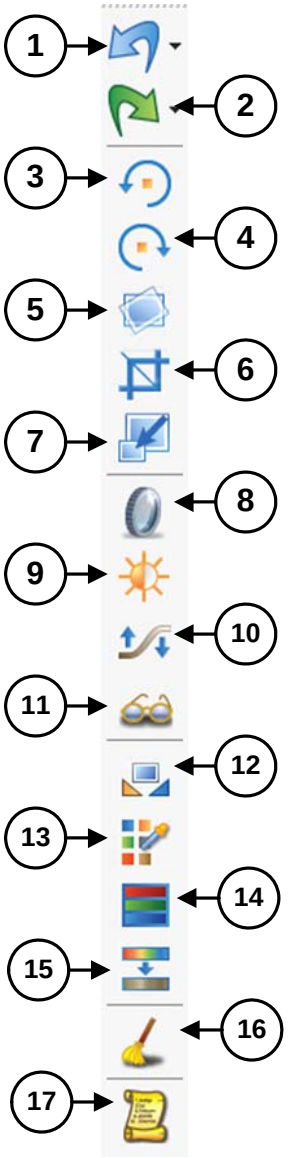
Toolbar



The **Toolbar** contains the most commonly used tools for easy access when working on images. From top to bottom, the tools are:

- **Undo (1):** The **Undo** tool undoes your most recent actions.
- **Redo (2):** The **Redo** tool redoes your undone actions.
- **Rotate CCW (3):** The **Rotate CCW** tool rotates the image by 90 degrees clockwise (right). Please see "Rotation" on page 30 for more about rotating images.
- **Rotate CW (4):** The **Rotate CW** tool rotates the image by 90 degrees counterclockwise (left). Please see "Rotation" on page 30 for more about rotating images.
- **Free Rotate (5):** The **Free Rotate** tool lets you rotate the image around your desired horizon line. Please see "Rotation" on page 30 for more about rotating images.
- **Crop (6):** The **Crop** tool lets you crop your image. Please see "Cropping" on page 31 for more about cropping images.
- **Resize (7):** The **Resize** tool lets you enlarge or shrink the image. Please see "Resize" on page 33 for more about resizing images.
- **Veiling Glare (8):** The **Veiling Glare** tool helps reduce haze in the image. Please see "Veiling Glare" on page 34 for more about the **Veiling Glare** tool.
- **Brightness/Contrast (9):** The **Brightness/Contrast** tool lets you adjust image and local brightness and contrast. Please see "Brightness/Contrast" on page 36 for more about the **Brightness/Contrast** tool.
- **Shadow/Highlight (10):** The **Shadow/Highlight** tool lets you control image shadows and highlights. Please see "Shadow/Highlight" on page 38 for more about the **Shadow/Highlight** tool.
- **Sharpness (11):** The **Sharpness** tool lets you adjust image clarity. Please see "Sharpness" on page 40 for more about the **Sharpness** tool.
- **White Balance (12):** The **White Balance** tool lets you correct image lighting. Please see "White Balance" on page 41 for more about the **White Balance** tool.

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Toolbar (Continued)

- **Color Tuning (13):** The **Color Tuning** tool lets you apply powerful color correction options to your image. Please see "Color Tuning" on page 43 for more about the **Color Tuning** tool.
- **Saturation (14):** The **Saturation** tool lets you control the amount of color in your image. Please see "Saturation" on page 45 for more about the **Saturation** tool.
- **Tint (15):** The **Tint** tool lets you turn your image into black-and-white. Please see "Tint" on page 46 for more about the **Tint** tool.
- **Noise Elimination (16):** The **Noise Elimination** tool lets you reduce color noise in your image. Please see "Noise Elimination" on page 47 for more about the **Noise Elimination** tool.
- **Recipe (17):** The **Recipe** tool applies the currently selected recipe to your image. Please see "Recipes" on page 50 for more about recipes.

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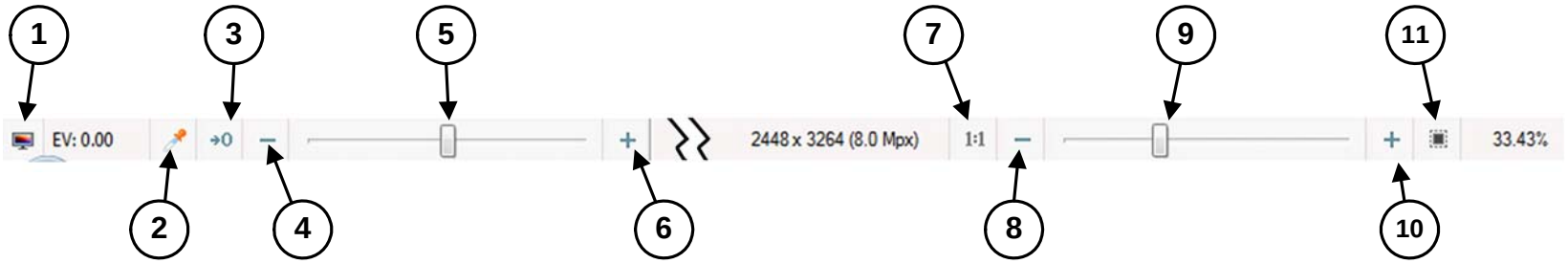
Status Bar

The **Status Bar** displays your image size in pixels and current zoom level. It also has several controls that let you customize the image display without affecting the image itself. From left to right, the controls are:

- **Choose Color Profile Menu (1):** The **Choose Color Profile** menu lets you select the display color model. Your available options are:
  - **Color Profiles:** The **Color Profile** menu displays a list of the ICC color profile(s) you have loaded. Select your desired profile by clicking it. By default your primary monitor's color profile is selected.
  - **Rendering Intent:** The **Rendering Intent** option sets the color management rendering intent. Your available options are **Perceptual**, **Saturation**, **Relative Colorimetric**, and **Absolute Colorimetric**)
  - **Load Color Profile:** Selecting **Load Color Profile** opens a window that lets you load a color profile for the display you are currently using. Selecting the appropriate color model allows HDR PhotoStudio to offer the most accurate possible view of your image. You may load multiple color models and switch between them as described above.
  - **Clear List:** Selecting **Clear List** unloads the color model(s) you loaded.
- **Bright Point Eyedropper (2):** The **Bright Point** eyedropper lets you select the brightest spot in your image. HDR PhotoStudio will adjust your image to make the selected spot appear as the brightest spot on your monitor. This only affects how the image is displayed on the screen for viewing purposes; it does not affect the actual brightness data in the image itself.
- **Reset Display Brightness Button (3):** Clicking the **Reset Display Brightness** button resets the default image display brightness. This only affects how the image is displayed on the screen for viewing purposes; it does not affect the actual brightness of the image itself.



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Status Bar (continued)

- **Display Brightness Down Button (4):** Clicking the **Display Brightness Down** button reduces the display brightness. This only affects how the image is displayed on the screen for viewing purposes; it does not affect the actual brightness data in the image itself.
- **Display Brightness Slider (5):** Clicking and dragging the **Display Brightness** slider adjusts the display brightness up (right) or down (left). This only affects how the image is displayed on the screen for viewing purposes; it does not affect the actual brightness of the image itself.
- **Display Brightness Up Button (6):** Clicking the **Display Brightness Up** button increases the display brightness.
- **Actual Pixels Button (7):** Clicking the **Actual Pixels** button zooms your image to actual size.
- **Zoom Out Button (8):** Clicking the **Zoom Out** button zooms out farther from your image.
- **Zoom Slider (9):** Clicking and dragging the **Zoom** slider zooms your image in (right) or out (left).
- **Zoom In Button (10):** Clicking the **Zoom In** button zooms in closer to your image.
- **Zoom to Fit Button (11):** Clicking the **Zoom to Fit** button zooms in or out until your entire image fits within the HDR PhotoStudio window.

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Keyboard Shortcuts (PC)

HDR PhotoStudio includes the following keyboard shortcuts when using a PC:

- **[CTRL]+[O]:** Lets you open a single image in HDR PhotoStudio.
- **[CTRL]+[S]:** Saves the current image.
- **[CTRL]+[SHIFT]+[S]:** Lets you save the current image under a new filename and/or folder.
- **[CTRL]+[F4]:** Closes the current image without exiting HDR PhotoStudio. You are prompted to save any unsaved changes.
- **[CTRL]+[E]:** Adjusts the image sharpness.
- **[CTRL]+[H]:** Opens the **Merge to HDR** window, which lets you merge multiple images into a single HDR image. Please see "Creating/Merging Images" on page 26 for more about merging images.
- **[CTRL]+[B]:** Lets you apply a recipe to multiple images. Please see "Batch Processing" on page 28 for more about batch processing.
- **[CTRL]+[Z]:** Undoes your actions. Saving images in the BEF file format preserves the history between editing sessions for viewing or inclusion in a recipe.
- **[CTRL+[Y]:** Redoes your undone actions.
- **[CTRL]+[C]:** Copies the current image to the Windows Clipboard.
- **[CTRL]+[V]:** Pastes the Windows Clipboard contents into the current image.
- **[CTRL]+[I]:** Toggles the Metadata window on and off. Please see "Metadata" on page 51 for more information about metadata and the **Metadata** window.
- **[NUM]+[+]:** Zooms in closer to your image.
- **[NUM]+[-]:** Zooms out farther from your image.
- **[NUM]+[*]:** Zooms in or out until your entire image fits within the HDR PhotoStudio window.
- **[NUM]+[/]:** Zooms the image to actual size.
- **[F1]:** Opens this manual in Adobe® Acrobat® format (PDF).
- **[F11]:** Toggles Fullscreen mode on and off. Access menus and tools by right-clicking the mouse when in Fullscreen mode, as described in "Mouse Shortcuts" on page 23.
- **[SPACE]:** Switch to Pan mode.
- **[ALT]+[F4]:** Exits HDR PhotoStudio. You are prompted to save any unsaved changes.

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Keyboard Shortcuts (Mac)

HDR PhotoStudio includes the following keyboard shortcuts when using a Mac:

Note: The ⌘ symbol signifies the [COMMAND] key and the ⌥ symbol signifies the [OPTION] key.

- **[⌘]+[H]:** Hides HDR PhotoStudio 2.
- **[⌥]+[⌘]+[H]:** Hides other applications.
- **[⌘]+[Q]:** Exits HDR PhotoStudio. You are prompted to save any unsaved changes.
- **[⌘]+[O]:** Lets you open a single image in HDR PhotoStudio.
- **[⌘]+[S]:** Saves the current image.
- **[SHIFT]+[⌘]+[S]:** Lets you save the current image under a new filename and/or folder.
- **[⌘]+[W]:** Closes the current image without exiting HDR PhotoStudio. You are prompted to save any unsaved changes.
- **[H]:** Opens the **Merge to HDR** window, which lets you merge multiple images into a single HDR image. Please see “Creating/Merging Images” on page 26 for more about merging images.
- **[⌘]+[B]:** Lets you apply a recipe to multiple images. Please see “Batch Processing” on page 28 for more about batch processing.
- **[⌘]+[Z]:** Undoes your actions. Saving images in the BEF file format preserves the history between editing sessions for viewing or inclusion in a recipe.
- **[⌘]+[Y]:** Redoes your undone actions.
- **[⌘]+[C]:** Copies the current image to the Clipboard.
- **[⌘]+[V]:** Pastes the Clipboard contents into the current image.
- **[⌘]+[I]:** Toggles the **Metadata** window on and off. Please see “Metadata” on page 51 for more information about metadata and the **Metadata** window.
- **[+]:** Zooms in closer to your image.
- **[-]:** Zooms out farther from your image.
- **[*]:** Zooms in or out until your entire image fits within the HDR PhotoStudio window.
- **[/]:** Zooms the image to actual size.
- **[F]:** Toggles Fullscreen mode on and off. Access menus and tools by right-clicking the mouse when in Fullscreen mode, as described in “Mouse Shortcuts” on page 23.
- **[⌘]+[[]:** Rotates the current image 90 degrees CCW.
- **[⌘ +[]]:** Rotates the current image 90 degrees CW.
- **[⌘]+[F]:** Lets you freely rotate the current image. Please see “Rotation” on page 30 for more information about free rotation.

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Keyboard Shortcuts (Mac - continued)

- **[C]:** Opens the **Crop** window. Please see "Cropping" on page 31 for more information about cropping images in HDR PhotoStudio.
- **[R]:** Opens the **Resize** window. Please see "Resize" on page 33 for more information about resizing images in HDR PhotoStudio.
- **[W]:** Opens the **Veiling Glare** window. Please see "Veiling Glare" on page 34 for more information about the **Veiling Glare** window.
- **[B]:** Opens the **Brightness/Contrast** window. Please see "Brightness/Contrast" on page 36 for more information about the **Brightness/Contrast** window.
- **[S]:** Opens the **Shadow/Highlight** window. Please see "Shadow/Highlight" on page 38 for more information about the **Shadow/Highlight** window.
- **[E]:** Opens the **Sharpness** window. Please see "Sharpness" on page 40 for more information about the **Sharpness** window.
- **[⌥]+[W]:** Opens the **White Balance** window. Please see "White Balance" on page 41 for more information about the **White Balance** window.
- **[⌥]+[C]:** Opens the **Color Tuning** window. Please see "Color Tuning" on page 43 for more information about the **Color Tuning** window.
- **[U]:** Opens the **Saturation** window. Please see "Saturation" on page 45 for more information about the **Saturation** window.
- **[T]:** Opens the **Tint** window. Please see "Tint" on page 46 for more information about the **Tint** window.
- **[N]:** Opens the **Noise Elimination** window. Please see "Noise Elimination" on page 47 for more information about the **Noise Elimination** window.
- **[M]:** Applies the currently loaded recipe to your image. Please see "Recipes" on page 50 for more information about recipes.

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Mouse Shortcuts

HDR PhotoStudio includes extensive mouse shortcuts. Right-clicking the mouse opens a menu with various options depending on whether or not you are in Fullscreen mode.

- **Normal mode shortcuts:** Right-clicking the mouse when in Normal mode accesses the following options:
  - **Operations:** Toggles the **Toolbar** on and off.
  - **Show Status Bar:** Toggles the **Status Bar** on and off.
  - **Use Large Icons:** Toggles large **Toolbar** icons on and off.
  - **Zoom In:** Zooms in closer to your image
  - **Zoom Out:** Zooms out farther from your image.
  - **Zoom to Fit:** Zooms in or out until your entire image fits within the HDR PhotoStudio window.
  - **Actual Pixels:** Zooms the image to actual size.
  - **Fullscreen:** Toggles Fullscreen mode on and off. Access menus and tools by right-clicking the mouse when in Fullscreen mode, as described below.
- **Fullscreen mode shortcuts:** Right-clicking the mouse when in Fullscreen mode accesses the following options:
  - **File:** Accesses the **File** menu. Please see "File Menu" on page 12 for more about the **File** menu.
  - **Edit:** Accesses the **Edit** menu. Please see "Edit Menu" on page 13 for more about the **Edit** menu.
  - **Recipe:** Accesses the **Recipe** menu. Please see "Recipe Menu" on page 13 for more about the **Recipe** menu.
  - **View:** Accesses the **View** menu. Please see "View Menu" on page 14 for more about the **View** menu.
  - **Operations:** Accesses the **Toolbar** functions. Please see "Toolbar" on page 16 for more about the Toolbar.
- **Scroll wheel:** Rotating the mouse scroll wheel zooms in and out of your image.

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Sliders and Fields

Many HDR PhotoStudio tools include both sliders and fields for a given setting, such as **Brightness** or **Highlight Power**. To use sliders, you may:

- Click and drag the slider to set the desired value,
- Click a spot on the slider track to "jump" the slider to that spot, or
- Double-click to reset the slider to its default position.
- Hover the mouse cursor over a field to see the minimum and maximum allowable values for that field.

Adjusting a slider changes the value in the associated field. You may also enter numerical values directly in the field itself by clicking the field and the using your numeric key-pad. Many fields let you make adjustments beyond the slider limitations. For example, the **Brightness** slider can make adjustments between +/-5f-stops; the **Brightness EV** field can make adjustments between +/-20f-stops.

Adjusting a slider or field also disables the image preview. Check the **Preview** checkbox to preview your image with the adjustment(s) made.

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Using HDR PhotoStudio

This chapter describes how to use the tools included with HDR PhotoStudio to create breathtaking results.

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Selecting Images

There are three ways to add images for editing in HDR PhotoStudio:

- **Creating/merging a new HDR image:** Merges multiple images to form a single HDR images. You can also press [CTRL]+[H] (PC) or [H] (Mac).
- **Opening an existing image:** Opens an existing normal or HDR image for editing. You can also press [CTRL]+[O] (PC) or [⌘]+[O] (Mac).
- **Batch processing:** Applies a recipe to your selected images. You can also press [CTRL]+[B] (PC) or [⌘]+[B] (Mac).

By default, the **Welome to HDR PhotoStudio** window appears when you launch HDR PhotoStudio. Select one of the three options by clicking the appropriate button.

Welcome to HDR PhotoStudio
What would you like to do?
Create/merge a new HDR image
Open an existing image
Batch processing
Do not show this dialog at startup

Creating/Merging Images

Merging several bracketed images captures all of the details visible to the human eye, thereby enhancing the HDR image by preventing the blow-outs or clipping that can occur when using a single image. In general, most HDR images require three bracketed exposures of the same scene (-2f-stop, normal f-stop, and +2f-stop). Most cameras can take three bracketed exposures; refer to your camera's documentation for instructions.

Some situations, particularly those with varying light and contrast, may require as many as five to seven images or even more, with a wider range of exposures and/or with narrower EV gaps between each exposure. After merging, you may continue mapping the resulting image to obtain your desired dynamic range using the HDR PhotoStudio editing tools.

The **Merge to HDR** window is where you add images for merging. You can open this window by:

- Clicking the **Create or merge a new HDR image** button in the **Welcome to HDR PhotoStudio** window when you first launch the program.

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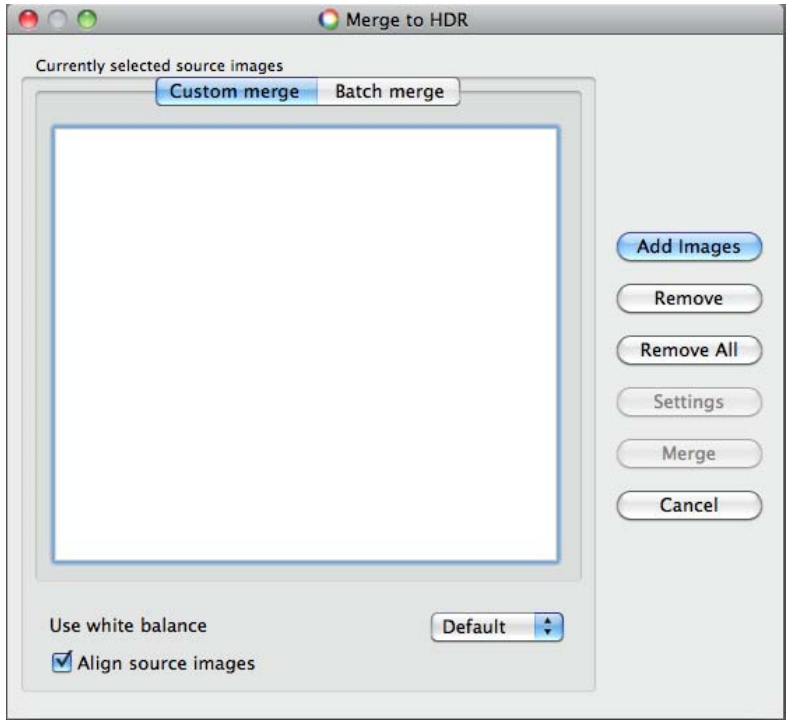
Selecting Images (continued)

- Selecting **File>Merge to HDR**.
- Pressing [CTRL]+[H] (PC) or [H] (Mac).
- Dragging your desired images into the HDR PhotoStudio window.



To merge images:

1. Open the **Merge to HDR** window using any of the above methods.
2. Click the **Add Images** button to navigate to and select the images to add for merging. You can select multiple images by pressing [CTRL] (PC) or [⌘] (Mac) and clicking your desired images. You may also add images one by one by repeating this step for each image you want to add.
3. Choose the white balance mode using the pull-down menu. Your options are:
   - **Default:** Corresponds to the standard CIE CAM Bradford algorithm.
   - **Unified Color**: Produces better results in many cases.
4. Checking the **Align Source Images** checkbox aligns all of the single images to present a single clear result. This option is useful if there is any chance that the camera moved in between shots because of vibration, accidental nudging, etc.
5. When you have finished adding images, click the **Merge** button to merge the images into a single HDR image.

HDR PhotoStudio merges the source images and generates a stunning HDR result in just a few moments.

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Selecting Images (continued)

Batch Processing

Batch processing applies a recipe (a stored series of actions) to multiple images at once, ensuring absolutely consistent results while also saving you time. In general, you should only batch images that are very similar in terms of brightness and color content, such as different shots of the same scene. Applying the same recipe to images that do not share common brightness and/or contrast information can yield unexpected results. Please see "Recipes" on page 50 for more about recipes.

The **Batch Processing** window is where you add images for batch processing. You can open this window by:

- Clicking the **Batch processing** button in the **Welcome to HDR PhotoStudio** window when you first launch the program.
- Selecting **File>Batch processing**.
- Pressing [CTRL]+[B] (PC) or [⌘]+[B] (Mac)].

To merge images:

1. Open the **Batch Processing** window using any of the above methods.
2. Highlight the recipe to apply in the **Source files** area.
3. To add an entire folder of images, click the **Add Folder** button and navigate to the desired folder. All of the images in the selected folder appear under the selected recipe.
4. To add specific images, click the **Add Images** button and navigate to the desired image(s). You may add multiple images by pressing [CTRL] (PC) or [⌘] (Mac) while selecting the images to add. All of the selected images appear under the selected recipe.

Note: If you add an image by mistake, clear the checkbox next to that image to skip it during batch processing.

5. Continue adding images and/or folders to recipes by repeating Steps 2-4 as needed.
6. Set your desired save options by clicking the **Save Options** button to open the **Batch Processing Output Options** window and making your selections. You may select the output folder, auto-numbering, output format, and quality options. Click **OK** when you have finished making your selections.
7. Click the **Execute** button to perform the batch processing.

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Undo/Redo

The **Undo** and **Redo** icons in the **Toolbar** give you up to 256 levels of undo and redo operations. Undoing actions occurs in the reverse order you performed the original action. For example, if you adjusted brightness, then set the white balance, and then altered the tint, the tint operation will be the first operation to be undone followed by the white balance and then the brightness. Redoing undone actions restores your original operations in the original order you performed them.

Saving your work in the BEF file format saves your history in the image metadata, which lets you view this history and include some or all of it in a recipe. This works even if you have exited and restarted HDR PhotoStudio in the meantime, or if you save a BEF file on one computer and open that file on another computer with a different installation of HDR PhotoStudio.

Clicking the arrows next to the **Undo** and **Redo** tools opens a menu that displays your action or undo history. You can undo or redo multiple actions by selecting them in the menu.

Note: Unsaved actions are not preserved after the image is closed or if you save the image to any format other than BEF. You can only undo actions taken during the current session. Actions taken during previous sessions may be added to a recipe for future use.

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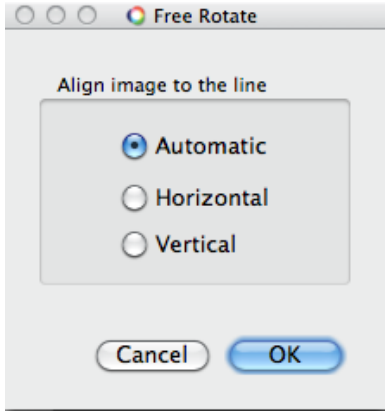
Rotation



HDR PhotoStudio lets you rotate images freely or in 90-degree increments.

Fixed

You can rotate the image in 90-degree increments by clicking the **Rotate CW** and **Rotate CCW** buttons in the **Toolbar**.

- Clicking the **Rotate CW** button rotates the image 90 degrees clockwise (right).
- Clicking the **Rotate CCW** button rotates the image 90 degrees counterclockwise (left).

Free-Angle

In addition to the 90-degree rotation described above, you can also freely rotate the image about a specified horizon line. Clicking the **Free Rotate** button in the **Toolbar** opens the **Free Rotate** window and draws a horizontal yellow line across the image.

The **Free Rotate** window lets you specify whether HDR PhotoStudio treats the line as **Horizontal** or **Vertical**. In most cases, selecting **Automatic** is the best option because it allows HDR PhotoStudio to calculate the most appropriate rotation based on the angle of the line. The line serves as the horizon to which the image will align when rotate.

Specify the rotation angle by either:

- Clicking and dragging the line end points to rotate the line.
- Drawing a new line by clicking your desired starting point, dragging to your desired end point, and then releasing the mouse button.

Click **OK** to rotate the image.

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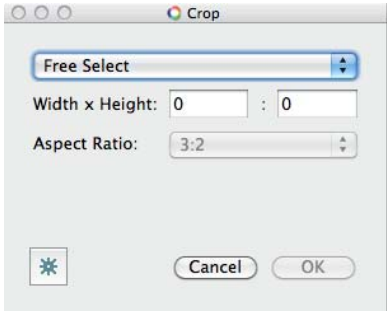
Cropping



Cropping an image removes unwanted portions of that image. HDR PhotoStudio dims the image when you select this option and your selected cropping area appears at normal brightness. This gives you a visual indication of the area of your image that will remain after the cropping is completed.

HDR PhotoStudio has three crop modes:

- **Free selection:** Choose your desired cropping area.
- **Fixed size:** Specify your desired crop size and then select the area to crop.
- **Aspect Ratio:** Crop your image to a predefined aspect ratio (width:height). This is useful if you are planning to insert the image into a video.

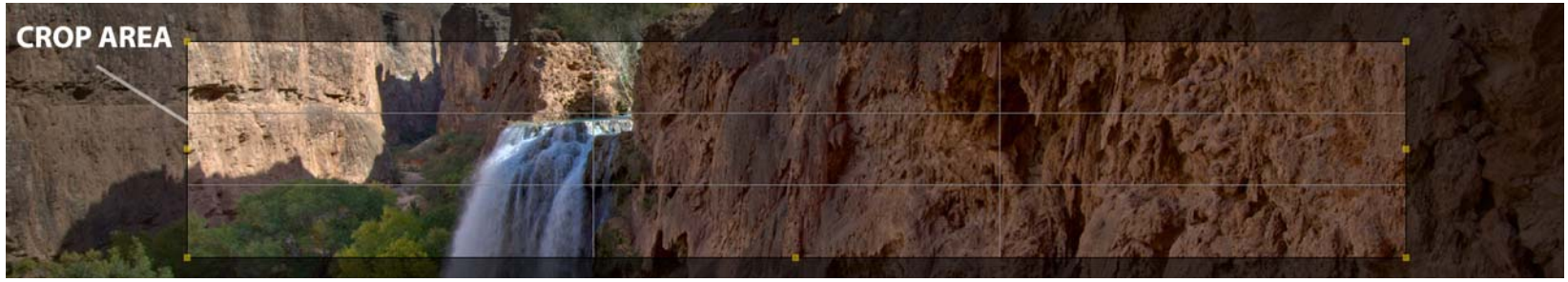
Checking the **Grid** checkbox in the **Crop** window displays a grid inside the cropping area.

Checking the **Anchors** checkbox in the **Crop** window displays draggable anchor points on the sides and in the corners of the cropping area.

Free Selection

To crop your image using free selection:

1. Click the **Crop** tool in the **Toolbar** to open the **Crop** window.
2. Select **Free Select** in the pull-down menu.
3. Click and drag the mouse over the image to select your cropping area. If you make a mistake, either repeat the click and drag to create a new cropping area or click anywhere inside the cropping areas to drag it around the image. You may also resize the cropping area by either clicking and dragging the anchor points on each side and in each



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Cropping (continued)

corner of the cropping areas, or by

entering numeric values in the **Width x Height X** and **Width x Height Y** fields.

4. Click **OK** to crop the image.

Fixed Size

To crop your image to a fixed size:

1. Click the **Crop** tool in the **Toolbar** to open the **Crop** window.
2. Select **Fixed Size** in the pull-down menu.
3. Enter your desired cropping area width and height in the **Width x Height X** and **Width x Height Y** fields, respectively. You may edit these values at any time.
4. A cropping area appears in your image. Click and drag to position the cropping area wherever you like, or click anywhere in your image to create a new cropping area with your specified size.
5. Click **OK** to crop the image.

Aspect Ratio

To crop your image to a specified aspect ratio:

1. Click the **Crop** tool in the **Toolbar** to open the **Crop** window.
2. Select **Aspect Ratio** in the pull-down menu.
3. Select your desired aspect ratio using the **Aspect Ratio** pull-down menu.
4. Click and drag the mouse over the image to select your cropping area. The cropping area may be any size, but will retain your specified width-to-height ratio. If you make a mistake, either repeat the click and drag to create a new cropping area or click anywhere inside the cropping areas to drag it around the image. You may also resize the cropping area by either clicking and dragging the anchor points on each side and in each corner of the cropping areas, or by entering numeric values in the **Width x Height X** and **Width x Height Y** fields.
5. Click **OK** to crop the image.

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Resize

Resizing your image enlarges or shrinks it without cropping. You may resize by pixel size or percentage and can either maintain the image's current proportions or specify new proportions to distort the image horizontally and/or vertically.

To resize your image:

1. Click the **Resize** tool in the **Toolbar** to open the **Resize** window.
2. Use the pull-down menu to select either **px** (pixels) or **%** (percentage or original size).
3. Check the **Constrain Proportions** checkbox if you want to preserve your image's current aspect ratio (ratio of width to height). Checking this box automatically enters a new Height value when you change the image Width and vice-versa. Clearing this checkbox lets you specify and horizontal and vertical size you like, which may distort the image horizontally and/or vertically.
4. Enter your desired values in the **Height** and/or **Width** fields.
5. Click **OK** to resize the image.

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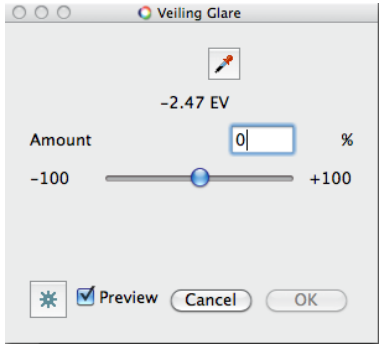
Veiling Glare



Veiling Glare is a type of lens glare that reduces image contrast. It appears as a whitish haze over the image and is a particular problem in HDR images because of the multiplying effect of merging multiple shots. Atmospheric haze can also reduce the contrast and detail of any image. The HDR PhotoStudio **Veiling Glare** tool can remove this haze, or even add additional haze depending on your needs. You can also use this tool to obtain very deep blacks, especially for night shots.

To adjust the level of veiling glare in the image:

1. Click the **Veiling Glare** tool in the **Toolbar** to open the **Veiling Glare** window.
2. The default base point setting is the 18% neutral tone (-2.47f-stop). Use the eyedropper to set your desired base point in the image.
3. Adjust the amount of veiling glare taken from the selected point by either using the slider or entering a numeric amount in the **Amount** field. You can toggle between the original and modified image by clicking the Preview button to ensure that you are getting good results.
   - Setting the value to -100% completely removes all veiling glare from the selected point.
   - Setting the value to +100% doubles the amount of veiling glare at the selected point.
4. Click **OK** to adjust the veiling glare.

For most images, setting the black point produces the best results. To do this, find a spot in your image that you know should be black. Zooming into this spot usually reveals a whitish haze, which is the actual veiling glare. Setting this spot as your black

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Veiling Glare (Continued)

point and then setting the amount at or near -100% makes the selected spot go completely black and also makes your image colors more vivid. The very deep blacks produced by this technique are especially useful for nighttime photographs.

You may also choose a non-black point if you notice haze in any other part of your image, such as atmospheric haze or mist. Select a point in this area and use the necessary amount of adjustment to remove this haze. In this situation, you should use the **Veiling Glare** tool with care, because excessive values can distort the colors in the rest of your image.

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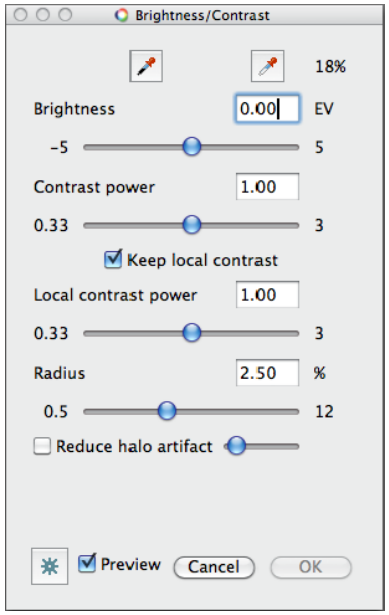
Brightness/Contrast



Brightness channel

Dynamic range mapping is the amount of brightness and contrast in your image. Brightness defines the overall luminance in the image while contrast (or "dynamic range") defines the ratio between the darkest and lightest parts of the image. A standard RGB (sRGB) image typically has a maximum contrast of around 3700:1 while a typical outdoor scene can have a ratio of around 1,000,000:1. HDR PhotoStudio offers you the full range of contrast visible to the human eye, even if you may not be able to see it on your display.

HDR PhotoStudio uses two different types of contrasts:

- **Global:** Global contrast adjusts the image's overall contrast level. Adjust global contrast using the **Contrast power s**lider.
- **Local:** Local contrast adjusts the contrast of smaller image details. This function is similar to the "detail contrast" or "micro-contrast" settings available in other imaging applications. Use local contrast to emphasize details relative to each other using the same radius relative to the overall image size. Adjust local contrast using the **Local contrast power** slider.

Global and local contrast are typically reciprocal values. Increasing global contrast reduces local contrast, and vice-versa. This allows HDR PhotoStudio to compensate for contrast changes made at either the global or local level. You can disable this feature by unchecking the K**eep local contrast** checkbox.

To adjust image brightness and contrast:

1. Click the **Brightness/Contrast** tool in the **Toolbar** to open the **Brightness/Contrast** window.

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Brightness/Contrast (continued)

2. Set the bright or 18% point on the image, as follows:
   - To select the bright point, select the **Set bright point** eyedropper and then click the desired point on the image. HDR PhotoStudio calculates the appropriate brightness change to make the selected point the brightest point on your monitor.
   - To select the 18% gray point, select the **Set 18% point** eyedropper and set the 18% brightness point. This is particularly useful if your image contains one or more faces because selecting a spot on a face as the 18% point usually gives the best results. HDR PhotoStudio calculates the appropriate brightness change to make the brightest point on the monitor 82% brighter than the selected 18% point.
3. Make further brightness adjustments as needed using the **Brightness** slider and/or by entering a number in the **Brightness EV** field, which has a maximum range of -20f-stop to +20f-stop.
4. Adjust the contrast using the **Contrast power** slider and/or **Contrast power EV** field.
5. Check the **Keep local contrast** checkbox if you want to maintain the default inverse relationship between image contrast and local contrast. Clearing this checkbox lets you set local contrast independently of overall contrast.
6. Adjust the local contrast using the **Local contrast power** slider and/or **Local contrast power EV** field.
7. Adjust the local contrast radius using the **Radius** slider and/or field. Smaller settings contrast smaller image details while larger settings affect larger image features. The radius is specified as a percentage of the overall image size. For example, a radius of 1% will equal 1/100th of the image's height and width.
8. If needed, check the **Reduce halo artifact** checkbox and adjust the slider for the level of reduction needed. Moving the slider to the right increases the halo reduction quality but also requires additional processing time.
9. Click **OK** to adjust the image brightness and contrast.

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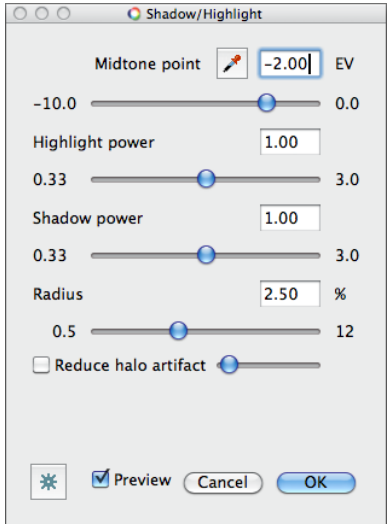
Shadow/Highlight



Brightness channel

The **Shadow/Highlight** tool lets you control the brightness of image highlights and/or shadows independently of each other.

To adjust the image shadows and highlights:

1. Click the **Shadow/Highlight** tool in the Toolbar to open the **Shadow/Highlight** window.
2. Select the image midpoint. You may do this using the **Midtone point** eyedropper or by entering a value in the **Midtone point EV** field. The midpoint is expressed in f-stops (EV) below the image bright point.
3. Adjust the highlight power using the **Highlight** power slider and/or **Highlight power EV** field. This adjusts the relative strength of the image's bright areas (areas that are brighter than the selected mid tone value).
4. Adjust the shadow power using the **Shadow power** slider and/or **Shadow power EV** field. This adjusts the relative strength of the image's shadow areas (areas that are less bright than the selected mid tone value).
5. HDR PhotoStudio preserves local contrast when adjusting shadows and highlights. Adjust the local contrast radius using the **Radius** slider and/or field. Smaller settings contrast smaller image details while larger settings affect larger image features. The radius is specified as a percentage of the overall image size. For example, a radius of 1% will equal 1/100th of the image's height and width.

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Shadow/Highlight (continued)

6. If needed, check the **Reduce halo artifact** checkbox and adjust the slider for the level of reduction needed. Moving the slider to the right increases the halo reduction quality but also requires additional processing time.
7. Click **OK** to adjust the image shadows and highlights.

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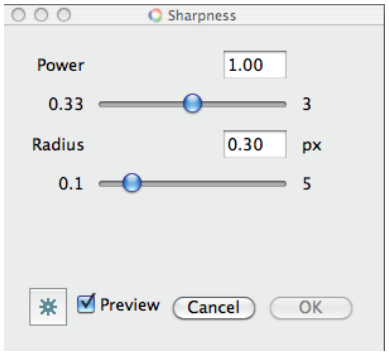
Sharpness



Brightness channel

HDR PhotoStudio adjusts image sharpness on a pixel by pixel basis. You may need to zoom into the image to the pixel level to see the effect, especially when working with small adjustments and/or a small radius. The Sharpness tool makes your image sharper or blurrier.

To adjust image sharpness:

1. Click the **Sharpness** tool in the **Toolbar** to open the **Sharpness** window.
2. For best results, click the **Actual Pixels** button in the **Status** bar to see your image in full detail.
3. Use the **Power** slider and/or field to adjust the sharpness. Values above 1 sharpen your image; values below 1 blur your image.
4. Adjust the **Radius** slider and or/field to adjust the sharpness radius, in pixels. In most cases, a high **Power** and small **Radius** will give you the best sharpening results.
5. Click **OK** to adjust the image sharpness.

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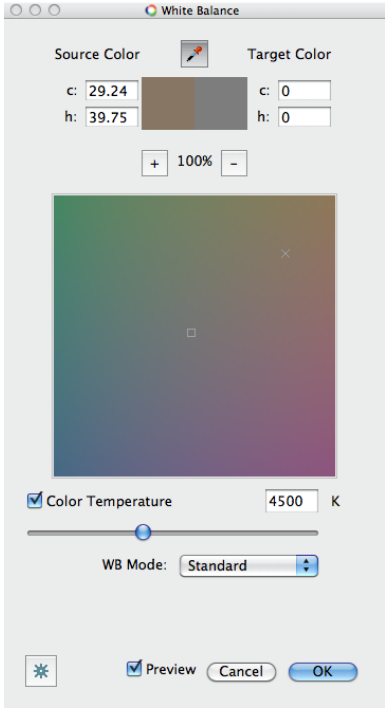
White Balance

Color channel

White balance adjustments correct for the lighting conditions when the shot was taken and simulate the eye's natural chromatic adaptation process whereby the eye adjusts its color perception to correct for different lighting. Most white balance adjustments are done by selecting a white point in the image or by using a gray index card and/or specifying a preset (such as **Tungsten** or **Fluorescent Cool**). HDR PhotoStudio lets you perform a "white balance" adjustment using any color tone, which lets to change any source color into any other color. This is a very powerful way to adjust your image's color balance.

To adjust white balance:

1. Click the **White Balance** tool in the **Toolbar** to open the **White Balance** window.
2. Select the white balance mode using the **WB Mode** pull-down window. The **Standard** option corresponds to the standard CIE CAM Bradford algorithm. You may also select the **Unified Color** algorithm, which produces better results in many cases. Select the **Unified Color** algorithm when performing non-white adjustments.
3. Use the **Source Color** eyedropper to select a point on the image that will be made white according to D65 white point standard. All other colors in the image will be adjusted accordingly. If you are performing a non-white adjustment, select the desired non-white tone that you will then correct using the **Gamut** control.
4. The **Gamut** control is where you select the exact target color by left-clicking the desired color. You can use the zoom controls above this control to zoom the



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White Balance (continued)

gamut in and out for detailed adjustments. You may also move the gamut by right-clicking and dragging it.

5. If desired, specify a color temperature by checking the **Color Temperature** checkbox and then either using the **Color Temperature** slider or entering your desired temperature in the **Color Temperature** field. Moving the slider to the right makes the image look cooler, and moving it to the left makes the image look warmer.
6. Click **OK** to adjust the white balance.

The following lists some common color temperature settings:

- 1,700K: Match flame
- 1,850K: Candle flame
- 2,700–3,300K: Incandescent light bulb
- 3,350K: Studio "CP" light
- 3,400K: Studio lamps, photo floods, etc.
- 4,100K: Moonlight, xenon arc lamp
- 5,000K: Horizon daylight
- 5,500–6,000K: Typical daylight, electronic flash
- 6,500K: Daylight, overcast
- 9,300K: CRT screen

Note: HDR PhotoStudio includes several commonly used white balance presets, which you can apply by clicking the Preset button and selecting your desired preset.

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Color Tuning

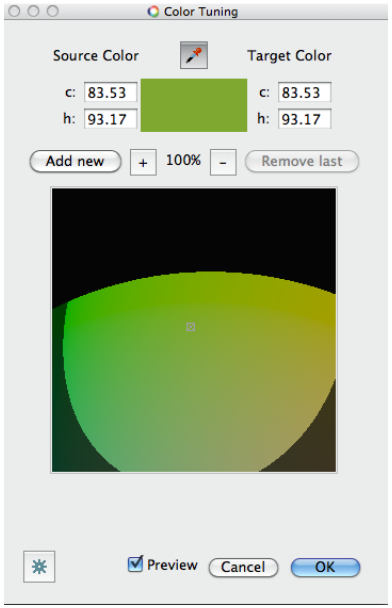
Color channel

Color tuning lets you fine-tune specific color tones without affecting any of the other colors in your image. This tool lets you make the grass greener… or make the sky a different shade of blue. You can also use it to match skin tones. These are just a few examples of the dramatic changes you can make with just a few mouse clicks. The HDR PhotoStudio **Color Tuning** tool lets you select and tune up to three source colors at once and automatically gives you an available tuning range based on your selected color(s). This tool is best for heavily saturated colors; selecting a relatively white or gray color may only allow a very narrow adjustment range.

*Note: This tool appears similar to the **White Balance** tool but is not designed for changing white tones.*

To tune your image colors:

1. Click the **Color Tuning** tool in the **Toolbar** to open the **Color Tuning** window.
2. Use the **Source Color** eyedropper to select the color in the image that you want to tune.
3. The **Gamut** control displays the range of available tuning options for the selected color. The more saturated the source color, the greater the range will be. Select the exact target color by left-clicking the desired color. You can use the zoom controls above this control to zoom the gamut in and out for detailed adjustments. You may also move the gamut by right-clicking and dragging it.
4. If desired, add another point by clicking the Add new button and repeating Steps 2 and 3 for the second and/or third point(s). If necessary, you may delete the most recently added point by clicking the Remove last button.



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Color Tuning (continued)

5. Click **OK** to tune the selected color(s).

Note: To preserve one or two specific color(s), add one or two points as described in Steps 1-2, above. Then, add another point as described in Step 4 and tune that point. This alters the tuned color while leaving the non-tuned colors unchanged.

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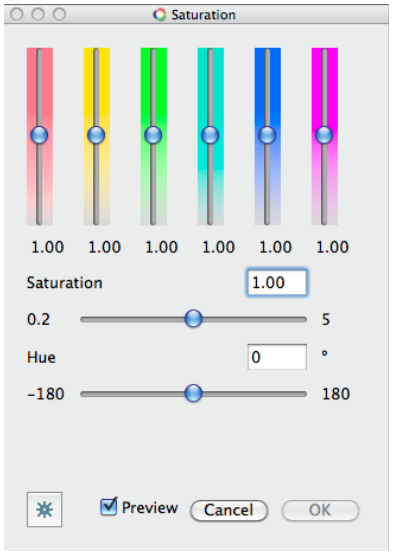
Saturation

Color channel

Saturation describes the amount of white light in a color. The closer a specific color is to white, the less saturated it is, and vice-versa. The HDR PhotoStudio **Saturation** tool lets you adjust your image saturation and hue. You can also control the saturation levels of six independent color channels (red, yellow, green, cyan, blue, and magenta) using the **Color Tone Equalizer** sliders.

1. Click the **Saturation** tool in the **Toolbar** to open the **Saturation** window.
2. Use the **Color Tone Equalizer** sliders and/or fields to adjust the saturation for each of the six color channels. Values above 1 increase the saturation of the selected color channel; values below 1 decrease the saturation for the selected color channel.
3. Use the **Saturation** slider and/or field to adjust the overall amount of saturation in the image. Values above 1 increase the saturation of all color channels; values below 1 decrease the saturation of all color channels.
4. Use the **Hue** slider and/or field to adjust the overall image hue. Small adjustments are usually best.
5. Click **OK** to adjust the image saturation and hue.



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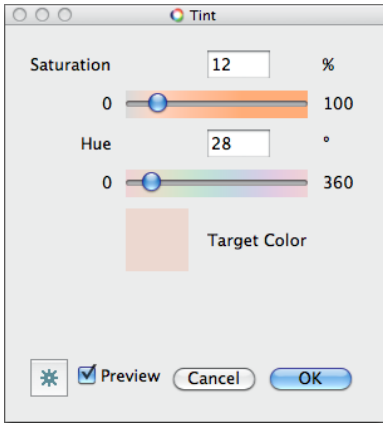
Tint



Color channel

Turn your image into a desaturated black and white rendering, add a sepia effect, or even create a psychedelic effect.

To adjust your image tint:

1. Click the **Tint** tool in the **Toolbar** to open the **Tint** window.
2. Use the **Saturation** slider and/or field to adjust the amount of tint saturation in the image. Values above 1 increase the tint saturation of the selected hue; values below 1 decrease the saturation of the selected hue.
3. Use the **Hue** slider and/or field to adjust the tint hue.
4. Click **OK** to adjust the image tint.

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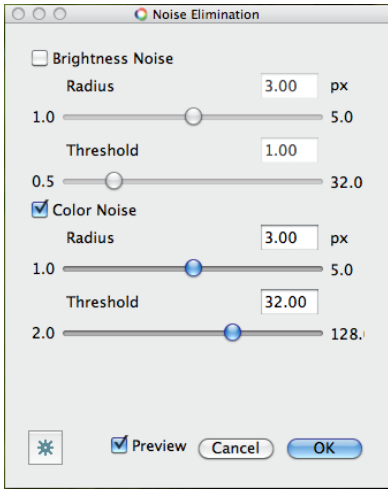
Noise Elimination

Noise reduction helps lower the amount of brightness and/or color noise in the image for a cleaner look. HDR PhotoStudio offers separate brightness and color channel noise reduction. Reducing brightness noise preserves the edges between light and dark areas without blurring them. The unique and powerful color noise reduction algorithm smooths the color noise that is typically present even in low-ISO images.

To reduce noise:

1. Click the **Noise** tool in the **Toolbar** to open the **Noise** window. A 100x100 pixel preview window appears in your image. Noise reduction is a time-consuming process that requires many calculations; the preview area improves performance. You may click and drag the preview area to see how the noise reduction will affect any given part of your image.
2. Check the **Brightness Noise** checkbox if you want to reduce brightness noise.
3. Adjust the desired brightness noise reduction radius in pixels using the brightness **Radius** slider or **Radius px** field. Larger values create smoother results but may obscure fine details.
4. Adjust the strength of the brightness noise reduction using the brightness **Threshold** slider or field. Larger values increase the amount of noise reduction but may obscure fine details.
5. Check the **Color Noise** checkbox if you want to reduce color noise.
6. Adjust the desired color noise reduction radius in pixels using the color **Radius** slider or **Radius px** field. Larger values create smoother results but may obscure fine details.



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Noise Elimination (continued)

7. Adjust the strength of the color noise reduction using the color **Threshold** slider or field. Larger values increase the amount of noise reduction but may obscure fine details.
8. Click **OK** to reduce the image noise. This operation may take a few minutes to complete.

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Presets

Most HDR PhotoStudio tools include presets. Presets are a great way to save and apply settings on a tool-by-tool basis.

Applying Presets

To apply a preset, click the **Presets** icon in the appropriate tool window and select your desired preset from the list of available options.

Creating Presets

To create a preset:

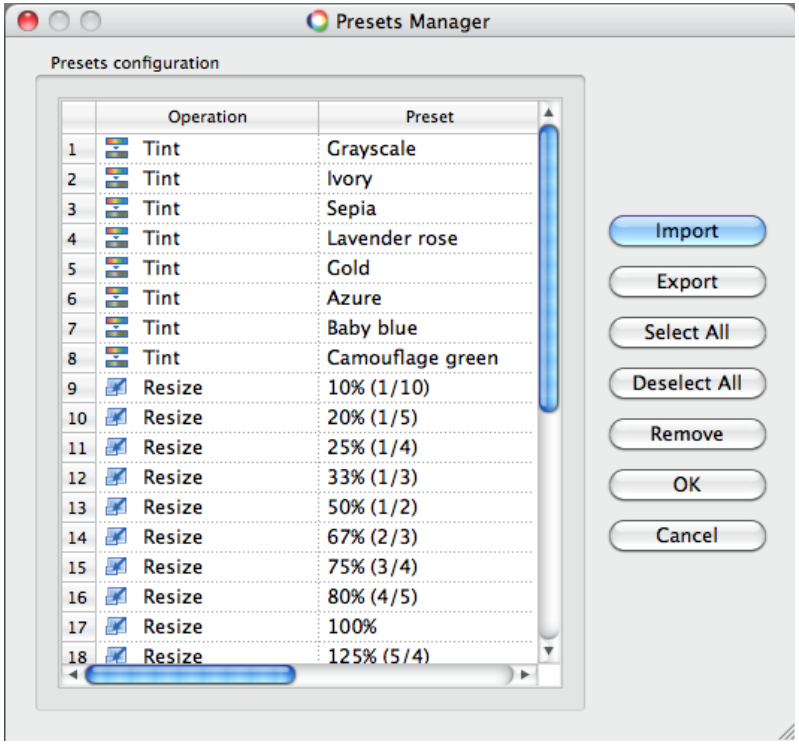
1. Open the tool and set it to your desired values.
2. Click the **Presets** icon and then select **Add preset** to open the **Preset Name** window.
3. Enter a name for the new preset in the field and then click **OK**. The new preset is now available for use.

Working with Presets

The **Presets** window lets you import, export, and delete presets.

Open this window by selecting **Edit>Presets**.

- Select one or more presets by checking the check-box(es) next to the preset(s) you want to work with. You may also click the **Select All** or **Deselect All** buttons.
- Import presets from another HDR PhotoStudio installation by clicking Import and then selecting the file to import.
- Export presets to another HDR PhotoStudio installation by select preset(s) to export and then clicking the **Export** button and selecting a filename and folder for the exported presets.
- Delete presets by selecting the preset(s) you want to delete and then clicking the **Delete** button.



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Recipes

Recipes store a series of editing actions for later use with other images. This is a powerful way to avoid redoing the same series of actions over and over when working on similar images. You may load recipes into your current HDR PhotoStudio session, assign a recipe to the **Recipe** tool in the **Toolbar**, and save and clear recipes.

Loading a Recipe

To load a recipe:

1. Select **Recipe>Load Recipe** to open the **Open** window.
2. Select the recipe you want to load and then click the **Open** button.

Assigning a Recipe to the Recipe Tool

To assign a recipe to the **Recipe** tool in the **Toolbar**:

1. Load the recipe as described above.
2. Select **Recipe** and then select the recipe you want to assign to the Recipe tool by clicking the desired recipe in the list of leaded recipes.
3. Clicking the **Recipe** tool in the **Toolbar** applies the currently assigned recipe to the image.

Clearing Loaded Recipes

To clear loaded recipes from the **Recipe** menu, select **Recipe>Clear List**. The cleared recipes are still available for use.

Creating a Recipe

Recipes are created using the current image's editing history. If you're working with a BEF file, this history may include actions taken during previous editing sessions. Click the small arrow next to the **Undo** tool in the **Toolbar** to view the image's editing history, which is the basis for creating a new recipe.

To create a recipe:

1. Select **Recipe>Create Recipe** to open the **Create Recipe** window. This window displays all of the actions that are available for insertion in the new recipe, including any other recipes you may have already applied to the image.
2. Check the checkboxes that correspond to the actions you want to include in the new recipe. You may click the **Select All** and/or the **Deselect All** buttons to speed up this process.
3. Click the **Save As** button to open the **Save As** window, which lets you specify your desired recipe name and folder.

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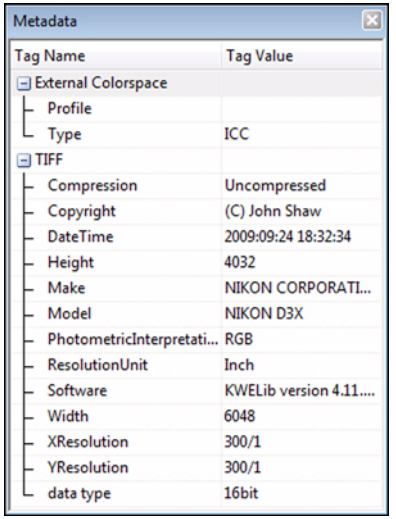
Metadata

Image metadata consists of various information about an image. Selecting **View>Show Metadata** opens the **Metadata** window for the current image. You may also press [CTRL]+[I] (PC) or [⌘]+[I] (Mac).

Depending on the information that was saved with the image, the **Metadata** window may display some or all of the following, plus any additional information that may be present:

- **Profile:** Color profile name.
- **Type:** Color profile type.
- **Compression:** Compression method used to save the image.
- **Copyright:** Image ownership information.
- **Date/Time:** When the image was taken.
- **Height:** Image height in pixels.
- **Make:** Camera make.
- **Model:** Camera model.
- **Interpretation:** How color is interpreted in the image (such as RGB).
- **Resolution Unit:** Unit used to measure the image resolution (such as inches).
- **Width:** Image width in pixels.
- **X Resolution:** Image resolution in dots per unit, in the X direction.
- **Y Resolution:** Image resolution in dots per unit in the Y direction.
- **History:** Editing history, if available.



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HDR PhotoStudio 2
User Manual

Unified Color Technologies, LLC
21 Airport Blvd, Suite F
South San Francisco, CA 94080
Phone: (650) 952-8886
Fax: (650) 872-8887
Email: info.web@unifiedcolor.com
Web: www.unifiedcolor.com

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